

# Scientastic

## Lesson Plan

### SLEEP JOURNAL

### GRADES 5-6



The Partnership in Education

Lesson plan written by: Devan Rodgers

Edited by: Brinley Kantorski

Print Layout and Design by: Stephanie Confer



Produced by the Partnership in Education  
Director John A. Pollock- pollock@duq.edu

Funding Provided By:  
Science Education Partnership Award  
National Institutes of Health  
Duquesne University



### Notes for the Teacher

- Grade Level: 5-6
- Approximate time:
  - Day 1 Activity: 35-40 Minutes
  - Day 10 Activity: 35-40 Minutes

# Introduction

## SLEEP JOURNAL

GRADES 5-6

### Overview

In this lesson students will be introduced to the importance of sleep and its effects on the human body. Students will complete a pre-test activity, which tests their prior knowledge of sleep. A class discussion on sleep allows the teacher to identify and clarify any misconceptions that students may have before beginning the sleep exploration. While the Sleep Journal activity is in progress students should view the “Scientastic” video on sleep. In addition to the Sleep Journal, students will be recording their relative sleepiness levels on three different days during the exploration. Students will be asked to maintain a sleep journal for 10 days, after which they will use the data collected to calculate their average sleep times. Afterwards, students will compare their results to their classmates. This will be used to generate a “How Tired are You Today?” graph. This activity can be used to show students how their sleepiness levels can change throughout the day and how they may not be consistent every day of the week.

### Rationale

Students today are not getting enough sleep at night and it is having a major impact on their performance in school as well as in other aspects of their daily lives.

### Learning Objectives

1. Students will be able to identify two facts and two fallacies about sleep after completing the pretest.
2. Students will be able to collect data about their own sleep patterns for 10 days.
3. Students will be able to calculate mathematical averages for multiple data points.
4. Students will be able to construct a graphical representation of their relative sleepiness levels throughout the day.
5. Students will be able to construct a graph of the class average bed and wake times and draw conclusions about the overall sleep habits of the class.
6. Students will be able to hypothesize a way to help improve their sleeping habits.



# Activities

## SLEEP JOURNAL

GRADES 5-6

Standards  
PA Common Core

### 5th Grade

Standard - 3.1.5.A9

S5.A.1.1.1

S5.A.1.1.2

S5.A.1.1.3

S5.A.2.1.1

### 6th Grade

Standard - 3.2.6.B7

S6.A.1.1.1

S6.A.1.1.2

S6.A.1.1.3

S6.A.1.2.1

S6.A.1.2.2

S6.A.2.1.1

Click here for further explanation of the standards:

<http://www.pdesas.org/standard/Views#110|792|0|0>

Next Generation Science Standards

### 5th Grade

3-5-ETS1-1

3-5-ETS1-2

3-5-ETS1-3

### 6th Grade

MS-ETS1-1

MS-ETS1-2

MS-ETS1-3

MS-ETS1-4

Click here for further explanation of the dstandards:

<http://www.nextgenscience.org/search-standards>



### Notes for the Teacher

- **Grade Level: 5-6**
- **Approximate time:**
  - **Day 1 Activity: 35-40 Minutes**
  - **Day 10 Activity: 35-40 Minutes**

# Introduction

## SLEEP JOURNAL

GRADES 5-6

### Materials, Resources, and Preparation

1. Copies of:
  - "Get Your Facts Straight!"
  - "Sleep Journal"
  - "How do I Record My Bedtimes and Wake Times?"
  - "How Tired Are You Today?"
  - "How Tired Are You Today? Graph Template,"
  - "How do I Calculate My Average Bedtime and Wake Time"
2. Calculators
3. Colored Pencils/Crayons
4. Poster board for Whole Class Graph
  - This can also be completed using a SMARTboard or an overhead projector

### Icons



This icon means that the concept may be important to write on the board.



This icon means that this document should be printed.



This icon means that the concept could be used as a discussion point.





# Teacher Pages

## SLEEP JOURNAL

GRADES 5-6

### Vocabulary

1. **Sleepiness Level** – The level of alertness and responsiveness the students are feeling at each indicated time of day
2. **Bed Time** – The time of day when the students are in bed ready to go to sleep
3. **Wake time** – The time of day when students are woken up by either an alarm or a parent to begin their daily activities
4. **Average Bed/Wake Time** – the mathematical average of the sum of the bed/wake times divided by the total number of bed/wake times recorded.



### Tips for the Teacher

- Suggest that students keep their sleep journal on their bed side table or on the refrigerator so that they will see it every day and remember to fill it out.
- Students do not need to bring the "Sleep Journal" to school each day.

# Activities

## SLEEP JOURNAL

GRADES 5-6

### Sleep Journal Introduction

#### DAY 1 Preparation



1. Prepare copies of:
  - "Get Your Facts Straight!"
  - "Sleep Journal," "Recording Bed-times and Wake-time"
  - "How Tired Are You Today?"
  - "Get Your Facts Straight Answer Key" (optional)

#### Anticipatory Set



1. Begin by asking students: "What do you know about sleep?" "Why do you think we need to sleep?"
  - a. Hold a short discussion for the students to respond and share their thoughts.
2. Administer the pretest "Get Your Facts Straight!" and go over the answers as a class.
  - a. Ask the students: "Do any of these answers surprise you?" "Are there any that you still have questions about?"
  - b. Discuss any of the pre-test questions that students may have questions about.

#### Activity

1. Pass-out:
  - "Sleep Journal"
  - "How Do I Record My Bedtime and Wake Time?"
2. Explain that students will be recording the time they wake up in the morning and the time they go to bed at night for 10 days.
3. Explain that they will be recording their times based on the conversion outlined on the "How Do I Record My Bedtime and Wake Time?"
  - Be sure to thoroughly explain how students will convert their times and answer any questions so that calculating their average times on day 10 will be easier.



### Tips for the Teacher

- Suggest that students keep their sleep journal on their bed side table or on the refrigerator so that they will see it every day and remember to fill it out.
- Students do not need to bring the “Sleep Journal” to school each day.

# Activities

## SLEEP JOURNAL

GRADES 5-6

• This time conversion takes the 15 minute quarters that make up an hour of time and converts them to the .25 unit quarters that determine a whole unit so the students’ bedtime conversion would look like this:

• This is because 45 minutes marks three quarters of an hour and .75 is three quarters of a whole unit.

Day of the week	Bedtime	Bedtime (as recorded in diary)
Friday	11:45 p.m.	11.75
Saturday	1:00 a.m.	13.0

4. Have students put away their sleep diaries and pass out the “How Tired Are You Today?” worksheet
  - Explain that students will be rating their sleepiness level on a scale from 1-7 at various times throughout the day on three specified days during their sleep study.
  - The worksheet is set up to run from Monday to Monday but this can be easily adapted to fit the needs of your classroom.
    - i. For example this duration could be extended to two weeks or even looked over the time span of only a few days.
5. If time permits it may be beneficial for students to be given the “Get Your Facts Straight! Answer Key” which is an in-depth explanation of the “Get Your Facts Straight pre-test



# Activities

## SLEEP JOURNAL

GRADES 5-6

### DAY 2

Preparation (10 days after Sleep Journal began)



1. Pass out calculators to the class.
2. Prepare copies:
  - “How Do I Calculate My Average Bedtime and Wake time?”
  - “How Tired Are You Today? Graph Template”
3. Prepare a large graph on the board or on poster paper for the students to plot their average total sleep time for each night the study was conducted.
  - This can also be done on a whiteboard, SMARTboard, overhead projector etc.

### Anticipatory Set



1. Divide students into small groups and ask them to compare the data in their sleep journals.
  - a. Ask them to look for similar patterns in their different data sets
    - This can also be done on a whiteboard, SMARTboard, overhead projector etc.
2. Ask students why they think these similarities (if there are any) occur?
  - a. Allow students to discuss
3. Have one member from each group write one of the groups ideas on the board
4. Discuss possible reasons for their findings.

### Activity Day 2

1. Have students take out their “How Tired Are You Today?” worksheet and pass out the “How Tired Are You Today? Graph Template”
2. Explain the instructions and answer any questions the students may have and allow them to complete the graphing activity.
  - a. Suggest that they use three different colors to indicate the different days on the graph.
  - b. Make sure they include a legend so that each day can be identified by anyone who may look at the graph.
3. Ask students to identify times when they recorded themselves feeling most sleepy and if students felt sleepier on any particular day
  - a. This is a good time for students to practice drawing conclusions from the data they collected.
  - b. Write a few of the students conclusions on the board so they can see the process of their own thinking





# Activities

## SLEEP JOURNAL

GRADES 5-6

4. Pass out the “How Do I Calculate My Average Bedtime and Wake time?”
  - a. Explain how to calculate a mathematical average as seen below.

Average bedtime = Sum of Bedtimes / Total number of Bedtimes

So if students were calculating the Average Bedtime over 4 days the equation would look like this:

Average bedtime = [(Bedtime Day 1) + (Bedtime Day 2) + (Bedtime Day 3) + (Bedtime Day 4)] / 4 Bedtimes

This will equal the Average Bedtime for the students.

An Example of Calculating the Average Bedtime for this lesson will look like this:

Average bedtime = [(BT Day 1)+(BT Day 2)+(BT Day 3)+(BT Day 4)+(BT Day 5)+(BT Day 6)+(BT Day 7)+(BT Day 8)+(BT Day 9)+(BT Day 10)] / 10

Average bedtime =  
[(9.5)+(9.75)+(9.5)+(9.25)+(9.0)+(9.5)+(9.25)+(9.0)+(9.5)+(9.25)] / 10

Average bedtime = 93.5 / 10

Average bedtime = 9.35 hours

5. Have students calculate their average times for Bed-time, Wake-time, Total hours of sleep.
  - a. For this lesson duration of 10 days the fraction denominator is always going to be 10
6. Have the students plot their average values for Total Sleep Time on the class graph and discuss the results
  - a. Do the students think their class mates are getting enough sleep?



# Activities

## SLEEP JOURNAL

GRADES 5-6

### Evaluation

After completing these activities students will need time to reflect on what they have learned. It may be a good idea to formatively assess students by having them respond to an exit slip or hold an end of class discussion on what they have learned and why. It is important to draw in moments from the lesson as well as moments from the Scientastastic Episode to show how both this works as a cohesive unit. Have the students formulate a hypothesis about their class's sleeping patterns and things that could be done to improve them. Encourage students to draw on ideas presented in the Scientastastic video and how the research done in the show is similar to the research they did while making their sleep journal.

In order to Evaluate students on this unit have them chose from a selection of Alternative Assessment types. These can include but are not limited to:

1. Write a book on the importance of sleep
2. Create a brochure for a sleep study
3. Create a video in the style of a TV commercial selling good sleep habits
4. Conduct a sleep survey of family members and evaluate the families sleeping patterns and make suggestions on how to improve them

# Scientastic!

## SCIENCE FAIR EXPERIMENT : ALTERNATIVE ASSESSMENT

Teacher Name: Scientastic Sleep Journal Evaluation

Student Name \_\_\_\_\_

Date \_\_\_\_\_

CATEGORY	4	3	2	1
Description of Procedure	Procedures were outlined in a step-by-step fashion that could be followed by anyone without additional explanations. No adult help was needed to accomplish this.	Procedures were outlined in a step-by-step fashion that could be followed by anyone without additional explanations. Some adult help was needed to accomplish this.	Procedures were outlined in a step-by-step fashion, but had 1 or 2 gaps that require explanation even after adult feedback had been given.	Procedures that were outlined were seriously incomplete or not sequential, even after adult feedback had been given.
Display	Each element in the display had a function and clearly served to illustrate some aspect of the experiment. All items, graphs etc. were neatly and correctly labeled.	Each element had a function and clearly served to illustrate some aspect of the experiment. Most items, graphs etc. were neatly and correctly labeled.	Each element had a function and clearly served to illustrate some aspect of the experiment. Most items, graphs etc. were correctly labeled.	The display seemed incomplete or chaotic with no clear plan. Many labels were missing or incorrect.
Diagrams	Provided an accurate, easy-to-follow diagram with labels to illustrate the procedure or the process being studied.	Provided an accurate diagram with labels to illustrate the procedure or the process being studied.	Provided an easy-to-follow diagram with labels to illustrate the procedure or process, but one key step was left out.	Did not provide a diagram OR the diagram was quite incomplete.
Idea	Independently identified a question which was interesting to the student and which could be investigated.	Identified, with adult help, a question which was interesting to the student and which could be investigated.	Identified, with adult help, a question which could be investigated.	Identified a question that could not be tested/investigated or one that did not merit investigation.
Conclusion/Summary	Student provided a detailed conclusion clearly based on the data and related to previous research findings and the hypothesis statement(s).	Student provided a somewhat detailed conclusion clearly based on the data and related to the hypothesis statement(s).	Student provided a conclusion with some reference to the data and the hypothesis statement(s).	No conclusion was apparent OR important details were overlooked.